

## WHAT IS CLAIMED IS:

1. A substantially pure or recombinant 312C2 protein or  
5 conservatively modified variants thereof, said protein:  
a) is expressed on activated T cells; or  
b) specifically binds to antibodies generated against  
SEQ ID NO: 2 or 4.
- 10 2. A protein or peptide of Claim 1, selected from the  
group consisting of:  
a) a natural protein from a warm blooded animal  
selected from the group of birds and mammals,  
including a rodent or primate;  
15 b) a protein or peptide:  
i) comprising at least one polypeptide segment  
of at least 14 amino acids of SEQ ID NO: 2;  
ii) comprising at least one polypeptide segment  
of at least 14 amino acids of SEQ ID NO: 4;  
20 or  
iii) which is not glycosylated;  
iv) which is in a buffered solution;  
v) which is attached to a solid substrate;  
vi) which exhibits a plurality of epitopes from  
25 SEQ ID NO: 2 or 4;  
vii) which is detectably labeled;  
viii) which is a synthetic polypeptide;  
ix) which is conjugated to a chemical moiety;  
x) which is a 5-fold or less substitution from a  
30 natural sequence; or  
xi) which is a deletion or insertion variant  
from a natural sequence.
3. A protein or peptide of Claim 1, comprising a sequence  
35 from the extracellular or the intracellular portion of a  
312C2.

4. A fusion protein comprising a peptide of Claim 1.

5. A sterile composition comprising the protein of Claim 1, and a pharmaceutically acceptable carrier.

5  
*Sub B2* 6. An antibody which specifically binds a protein or peptide of Claim 1.

7. An antibody of Claim 6, wherein:

- 10 a) said 312C2 is a mammalian protein, including a mouse or human;
- b) said antibody is raised against a purified peptide sequence of SEQ ID NO: 2 or 4;
- 15 c) said antibody is a monoclonal antibody;
- d) said antibody is detectably labeled;
- e) said antibody is attached to a solid substrate;
- f) said antibody is in a sterile composition; or
- g) said antibody is in a buffered composition.

20 8. A method of purifying a 312C2 protein or peptide from other materials in a mixture comprising contacting said mixture to an antibody of Claim 6, and separating bound 312C2 from other materials.

25 9. An isolated or recombinant nucleic acid capable of encoding a protein or peptide of Claim 1.

10. A nucleic acid of Claim 9, wherein said nucleic acid:

- 30 a) encodes a sequence of SEQ ID NO: 2 or 4;
- b) comprises a sequence of SEQ ID NO: 1 or 3; or
- c) encodes a sequence from an extracellular domain of a natural 312C2;
- d) encodes a sequence from an intracellular domain of a natural 312C2;
- 35 e) attached to a solid substrate;
- f) is detectable labeled; or
- g) is in a sterile composition.

11. An expression or replicating vector of Claim 9.
12. A kit comprising:
- 5      a) a substantially pure 312C2 or fragment of Claim 1;  
Sub B3 }      b) an antibody or receptor which specifically binds a  
                    312C2; or  
                    c) a nucleic acid encoding a 312C2 or peptide.
- 10 13. A method for detecting in a sample the presence of a  
312C2 nucleic acid, protein, or antibody, comprising  
testing said sample with a kit of Claim 12.
14. A method of modulating the physiology of a cell  
15 comprising contacting said cell with:
- a) a substantially pure 312C2 or fragment of Claim 1;  
            b) an antibody or binding partner which specifically  
                binds a 312C2; or  
            c) a nucleic acid encoding a 312C2 or peptide.
- 20 15. The method of Claim 14, wherein said cell is a T cell  
and said modulating of physiology is:
- a) apoptosis of said T cell; or  
            b) activation of said T cell
- 25 16. A method of Claim 14, wherein said cell is in a tissue  
and/or in an organism.
17. A method of expressing a 312C2 comprising expressing a  
30 nucleic acid of Claim 9.
18. A cell, tissue, organ, or organism comprising a  
nucleic acid of Claim 9.
- 35 19. A recombinant nucleic acid comprising sequence at  
least about 70% identity over a stretch of at least about

30 nucleotides to a 312C2 nucleic acid sequence of SEQ ID NO: 1 or 3.

20. A nucleic acid of Claim 19, further encoding a polypeptide comprising at least about 60% identity over a stretch of at least about 20 amino acids to a 312C2 sequence of SEQ ID NO: 2 or 4.

21. A method of treating a host mammal having an abnormal immune response by administering to said mammal an effective dose of:

- a) an antibody or binding partner which binds specifically to a 312C2;
- b) a substantially pure 312C2 protein or peptide thereof; or
- c) a nucleic acid encoding a 312C2 peptide.

22. The method of Claim 21, wherein said abnormal immune response is characterized by:

- a) a T-cell immune deficiency;
- b) chronic inflammation; or
- c) tissue rejection.

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